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of this plant known to be in existence was collected by Galeotti (no. 5456 ♂) and is in the herbarium at Brussels.

D. LOBATA, Uline, var. *morelosana*. Middle lobe of leaf obtuse, mucronate; larger leaves measuring 2.5 dm. long and wide; flowers with deeper tube; pedicels shorter and nearer together than in the species.

Morelos, lava beds near Cuernavaca, altitude 1,540 m., C. G. Pringle, no. 7341 ♂.

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#### IV. — NEW PHANEROGAMS, CHIEFLY GAMOPETALAE, FROM MEXICO AND CENTRAL AMERICA.

By B. L. ROBINSON.

*Hechtia sphaeroblasta*. Only ♂ plant known: leaves 7 dm. long, 4.5 cm. broad at the base, gradually attenuate to a slender pungent apex, gray and scurfy on the lower (in dried state concave) surface, pale green but nearly smooth upon the reverse face, armed on the margins at intervals of about 2 cm. with very sharp incurved stramineous spines (2 mm. in length): inflorescence many-branched; axes smooth and glabrous, at least 7 dm. high; bracts ovate-oblong, acute, entire, 1 cm. or more long, scarious, with many fine dark veins; branches 1 to 3 dm. long, angled, ascending, glabrous, 5–9-branched near the middle, bracts of the second order, small, scarious, about 2 mm. long; branchlets 4 to 12 cm. long, slender, ascending, loosely floriferous from the base to the tip, their bractlets scarious, 1 mm. long; buds broadly ovoid almost globose, 3 mm. long just before expanding: flowers 14 to 30 on each branchlet, borne singly or subverticillate, nearly sessile, 6 mm. broad in anthesis: calyx-divisions oval, 2 mm. long; petals (in dried state yellowish white) suborbicular, distinct or nearly so, 3 mm. long, obtuse: rudimentary ovary in ♂ flowers glabrous. — Collected by E. W. Nelson at Tlapa, Guerrero, Mexico, altitude 1,200 m., 3 December, 1894, no. 2044. Types in herb. Gray and herb. U. S. Nat. Museum. This species possessing subsessile flowers, elongated flowering branchlets, and glabrous ovary, evidently belongs in the group with *H. rosea*, Morr. (which has much larger flowers), *H. stenopetala*, Kl. (which has a much denser inflorescence and acuter petals), and *H. gamopetala*, Mez (which has the petals united).

*SMILAX DOMINGENSIS*, Willd., var. *microscola*. Stem rather thickly

and branches sparingly covered with very short straight conical spines (0.5 mm. in length): otherwise corresponding closely to the typical West Indian plant. — Collected by E. W. Nelson between Tumbala and El Salto, Chiapas, Mexico, altitude 466 to 1,400 m., 29 October, 1895, no. 3392. Types in herb. Gray and herb. U. S. Nat. Museum.

*POLYGONUM MEISNERIANUM*, Cham. & Schlecht., var. *jalapense*. Stems, ochreae, leaf-margins, and bracts covered with numerous stalked glands; prickles (developed in the typical form) obsolete: leaves inclining to hastate lobing at the base. — This is probably the *P. Meisnerianum* of Cham. & Schlecht. in *Linnaea*, v. 90, but much more glandular than the typical form, characterized in *Linnaea*, iii. 40. — Collected by C. G. Pringle in wet places near Jalapa, Mexico, altitude 1,225 m., 5 April, 1899, no. 8111. This species appears to have been overlooked by Mr. Hemsley, as it is not recorded in the *Biologia Centrali-Americana*.

*Telanthera mollis*. Branches lignescent, terete becoming subquadrangular near the slightly tumid nodes, covered when young with a soft short spreading or even reflexed pubescence, at length quite glabrate: leaves lance-oblong, entire, acute at each end, finely appressed-pubescent and (in the dried state) rugulose above, much paler and sericeous-tomentose beneath, 4 to 6 or more cm. long, about half as broad; pubescent petioles about 1 cm. long: heads oval, obtuse, leafless, 1.4 to 2.2 cm. long, 1.4 cm. in diameter, borne in 2–4-chotomous spreading round-topped panicles; ultimate tomentose pedicels 1 to 1.5 cm. long; bracts ovate, acute: sepals oblong, acute and pungent, subequal, 7 mm. long, dorsally covered with long dense silky hair: staminal tube a little shorter than the ovary, the sterile segments 2.3 mm. long, fimbriated above, about equalling the filaments and somewhat surpassed by the anthers: style nearly as long as the ovary; stigma globose, unlobed. — Collected in Oaxaca in a cañon above Totolapam by C. & E. Seler, 3 January, 1896, no. 1637. Near *T. pubiflora*, Moq. and (ex char.) *T. pycnantha*, Moq. Differing from the former in its rounded many-headed panicles and from both in its larger strongly villous flowers. Type in herb. Gray.

*Mimosa Deamii*. Arborescent, 3 m. high: branches terete, unarmed, fuscous, tomentulose and roughened by the enlarged persistent bases of strigose hairs; stipules short, thickish, subulate, strigose: petioles 1.5 to 2.7 cm. long: pinnae a single pair; their rhachises about 5 cm. long, each bearing 5 to 6 pairs of leaflets, strigose; leaflets elliptical, rounded at each end, coriaceous, glabrous above, sparingly strigose (chiefly on the excentric midnerve) beneath, 2.3 to 3.6 cm. long, half as broad, 3–4-

nerved, strigose-ciliate: flowers roseate, in globose heads; peduncles 2.5 cm. long, borne by 2's or 3's at the nodes of unbranched terminal racemes: heads (including exerted stamens) 1.6 cm. in diameter: bractlets small, spatulate or oblanceolate, with thickened pubescent acute ends: calyx translucent, closely appressed, scarcely toothed but strongly ciliate: corolla 4-lobed, 4-nerved, 2.7 mm. long, the lobes oblong, subcarinate, tomentulose toward the summit, about half the length of the tube: stamens 4; filaments 3 times as long as the corolla, slightly enlarged above: fruit green, 3-4-jointed, constricted between the oval moderately flattened strigose segments, stipitate, 3 to 3.4 cm. long, 8 mm. broad. — Collected at Salina Cruz, State of Oaxaca, Mexico, by Charles C. Deam, 21 December, 1898, no. 113.

This species (of § *Eumimosa*) is most nearly related to *M. psilocarpa*, Robinson, but is readily distinguished by its strigose fruit and narrow strigose not soft-pubescent leaflets.

**M. psilocarpa.** Branches ligneous, terete, unarmed, roughened by ferrugineous lenticels: petioles 2.3 to 5.4 cm. long; leaves 1-jugate; leaflets on each division normally 3 pairs (the inner member of the lowest pair often reduced), obovate, oblique or semicordate at the base, firm and subcoriaceous, 2.8 to 3.6 cm. long, 1.5 to 2.5 cm. broad, when young finely pubescent upon both surfaces, in age pale, lead-colored (in dried specimens), slightly lucid, glabrate except for a few short appressed or incurved stramineous bristles upon the slightly thickened margin and upon the nerves beneath: peduncles about 3 cm. long, divergent, borne singly or by twos at the nodes of short terminal racemes; bracts subulate, ciliate; flowers perfect (so far as observed), capitate: calyx 0.7 mm. long, slightly toothed, ciliolate: corolla 4-toothed, 4 mm. long, 4-nerved; the teeth lanceolate, one-third the length of the tube: stamens 4: ovary slender-stiped; pod 2-4-jointed, glabrous, wholly unarmed, 2 to 3 cm. long exclusive of the stipe (nearly half as long), 1.3 cm. broad, constricted between the segments, mucronate. — Mountain woods between "S. Carl and S. Bartolo Yuahntepec," Oaxaca, collected by C. & E. Seler, 6 January, 1896, no. 1727. This species belongs to Bentham's series *Castae* and may be placed near *M. lactiflua*, Delile, although in habit and large leaflets it suggests some of the *Sensitivae*.

CUPHEA REIPUBLICAE, Rob. & Sea. Proc. Am. Acad. xxviii. 106. The type number of this species, unfortunately cited at the time of publication as Pringle's no. 4112, is his no. 4142.

VERNONIA LIATROIDES, DC. Prodr. v. 34 (1836). Add syn. *Eupatorium tulanum*, Klatt, Abh. Naturf. Ges. Halle, xv. 323 (1882).

**Stevia arachnoidea.** Stem, branches of inflorescence, &c., at first white-lanate, soon arachnoid, and at length merely glandular-puberulent: leaves opposite, lance-oblong, acute, cuneate at the base to a very short petiole, pinnately veined, 8 cm. or more in length, dentate, puberulent above, much paler and tomentose beneath: inflorescence a round-topped dense compound corymb, its branches mostly alternate, spreading at a considerable angle and often exceeded by the long narrow linear subtending bracts; heads slender, crowded; involucre bracts puberulent, acute, 6 mm. long: corollas pubescent, 5 mm. long, the tube purplish, the limb white or at least pale: achenes black, glabrous: pappus of several short unequal acute scales, without long awns. — *S. compacta*, Coult. in J. D. Smith, Enum, Pl. Guat. ii. 33, not Benth. — Collected by Mr. J. Donnell Smith on the Volcano of Agua, Department Zacatepequez, altitude 2,700 m., April, 1890, no. 2327. Type in herb. Gray. *S. compacta*, Benth. Pl. Hartw. 197, must from description have been a very different plant with ovate leaves a third to half as long and involucre also much smaller. Schultz Bipontinus (Linnaea, xxv. 279) regarded Bentham's species as probably a form of *S. rhombifolia*, HBK.

*S. ASCHENBORNIANA*, Sch. Bip. Linnaea, xxv. 269 (1852). Mr. J. M. Greenman informs me that his *S. diffusa*, Proc. Am. Acad. xxxii. 307 (1897), proves on comparison with authentic material at the Royal Botanical Museum in Berlin to be identical with *S. Aschenborniana*.

*S. bicrenata*, Klatt, Engl. Jahrb. viii. 32, was founded upon a poorly developed specimen of *S. elatior*, HBK.

*S. elatior*, HBK., var. *decumbens*, Rob. & Greenman, Am. Jour. Sci. l. 152., later published as *S. decumbens*, Greene, Pittonia, iii. 32, is *S. Liebmannii*, Sch. Bip. in Klatt, Leopoldina, xx. 75.

*S. MADRENSIS*, Gray, Proc. Am. Acad. xxi. 382, should, I believe, be reduced to *S. Plummerae*, Gray. There seem to be no differences of moment.

*S. MONARDAEFOLIA*, HBK., var. *amblyolepis*. Leaves large and very thin, the blade somewhat deltoid-lanceolate or ovate, rather abruptly contracted at the base: scales of the involucre obtuse or rounded at the apex. — Collected by E. A. Goldman, at Pinal, Chihuahua, Mexico, altitude about 1,800 m., 19 September, 1898, no. 116.

*S. MONARDAEFOLIA*, HBK., var. *macrophylla*. Leaves rhombic-ovate, 1.2 dm. long, 5 to 6 cm. broad, cuneately decurrent upon the petioles 3 cm. or more in length: involucre bracts acute. — Collected by C. G. Pringle, woods of Eslava, Valley of Mexico, Federal District,

altitude 2,350 m., 28 January, 1899, no. 8057, and earlier in woods at base of mountains in the Valley of Mexico, Federal District, 6 November, 1896, no. 7328.

**S. neurophylla**, ROBINSON & GREENMAN, n. sp. Erect strict slender somewhat rigid herb, 3 to 6 dm. high: stem terete, puberulent, simple or sparingly branched: leaves strictly opposite, thick, rigid, appressed, linear-oblong, longitudinally ribbed with many close parallel nerves, 2 to 5 cm. long, 3 to 5 mm. broad, sessile by a subclasping base, concolorous, green and nearly glabrous upon each surface; the lowest shorter, the upper also much reduced and distant: heads capitately aggregated at the summit of the stem; bracts of the involucre rather rigid, glandular-puberulent, acute, 5 to 7 mm. long: corolla white, nearly glabrous: achene dark nearly black, hispid both between and upon the lighter colored angles; pappus of 4 to 6 long almost plumose awns and as many oblong intermediate scales. — Collected by E. W. Nelson between Ayusinapa and Petatlan, Guerrero, Mexico, altitude 1,500 to 2,100 m., 14 December, 1894, no. 2133. Types in herb. Gray and herb. U. S. Nat. Museum.

**S. Rosei**. Herbaceous smoothish perennial herb with tough dark fibrous roots: stems single, erect or slightly decumbent, 3 to 5 dm. high, usually branched from the middle, puberulent (under a lens) with crisped white hairs or quite glabrate; branches opposite, ascending: leaves opposite, sessile, oblong or lance-oblong, subcoriaceous, veiny, crenate-serrate or nearly entire, usually obtuse, with 3 to 5 more or less anastomosing nerves: heads in several small dense somewhat leafy-involucrate capitate corymbs, these together forming a very loose leafy corymb; involucre bracts green, linear, attenuate, very acute, 8 to 10 mm. long, almost glabrous, not much surpassed by the white or pale purplish corollas: achenes black, glabrous; pappus of 3 or more oblong obtuse scales with or without 2 or 3 naked awns. — Collected by Dr. J. N. Rose on the Sierra Madre, west of Balaños, Jalisco, 15 to 17 September, 1897, no. 2994; also in the state of Durango, 13 August, 1897, no. 2258. This species is evidently related to *S. Pringlei*, but differs in its short-pedicelled glomerate heads, larger leaves, etc. It is also related to *S. venosa*, Gray, and *S. Plummerae*, Gray, but differs from both in inflorescence and character of its involucre bracts.

**S. Seleriana**. Stems stoutish, lignescent, terete, white-lanate upon the younger internodes, soon arachnoid, glabrate, and at length verrucose with prominulous lenticels: leaves all opposite, decussate, petiolate, oblong, crenate at the sides, subentire at the acutish apex, entire at the

cuneate base, thickish, glabrous and covered on both surfaces (under a lens) with very numerous dark glandular dots; blade 8 to 10 cm. long, 2.3 to 3 cm. broad, pinnate-veined, the midnerve prominent beneath, grooved above; petiole 1.8 cm. long; the upper axils proliferous: inflorescence relatively small, 4 cm. broad, a trichotomous short-peduncled corymb; involucre bracts 5 to 6 mm. long, viscid-pubescent upon the back, acutish: flowers 5; corolla, apparently white, about twice the length of the involucre, the tube viscid-puberulent: achenes smooth or nearly so, crowned with several narrow acute or subulate scales; more elongated awns apparently lacking. — Collected by C. & E. Seler in mountain woods between St. Carlos and St. Bartolo, Yantepec, Oaxaca, Mexico, 6 January, 1896, no. 1695. Well marked. Types in herb. Gray and herb. Royal Botanical Museum, Berlin.

*S. serrata*, Cav., var. *arguta*. Leaves narrowly linear, ascending or appressed, sharply serrate with incurved teeth: scales of the involucre attenuate to a dark subulate tip. — Collected by C. G. Pringle on the Cerro Ventoso above Pachuca, altitude 2,900 m., 18 August, 1898, no. 7652.

*S. tephra*. Ashy throughout with a close pulverulent pubescence not glandular: stems herbaceous, terete, purplish: leaves scattered, elliptical, obtuse, crenate-serrate, 3 cm. long, half as broad, 3-nerved, finely pubescent upon both surfaces, slightly paler beneath, mostly conduplicate along the midrib, gradually narrowed to a petiole (1 cm. in length); fascicles of smaller leaves on short or scarcely developed axillary shoots: inflorescence a moderately dense compound corymb; its branches chiefly alternate, ascending, the lower and longer about 8 cm. in length, the heads densely clustered at their summits; individual pedicels 1 to 2 mm. long; involucre scales merely acutish, cinereous-puberulent, without evident glands, green or purplish-tinged, 4 to 5 mm. long: flowers 5, about twice the length of the involucre: corolla-tube purplish, puberulent; limb white or nearly so: achenes black, lucid, 4 mm. long, minutely roughened upon the angles; pappus of three awns (equalling the corolla) and 3 short blunt intermediate scales. — Collected by C. G. Pringle, Sierra de Pachuca, Hidalgo, altitude 2,925 m., 13 September, 1899, no. 8229.

*Piptothrix Goldmanii*. Glabrous: stems terete, striate, purple, slightly lucid; internodes 6 to 8 cm. long: branches opposite: leaves deltoid-ovate, acuminate, serrate, 3-nerved from the shortly cuneate base, green and glabrous upon both surfaces, 8 to 10 cm. long, 6 to 8 cm. broad, thin but firm in texture, reticulated veins slightly prominent upon

the scarcely paler under surface; petioles slender, 1.5 cm. long, purple: heads small, crowded in round-topped corymbs at the ends of the branches; pedicels and bracts filiform; scales of the involucre linear, substrate, 2.5 mm. long, slightly ciliated near the acute tip: corollas white, 3 mm. long, enlarged at the base of the tube, glabrous: achene scarcely over 1 mm. long, black, glabrous; pappus-bristles 5 to 8, often 5 one over each angle of the achene, unequal, white, caducous. — Collected by E. A. Goldman near Batopilas, Chihuahua, Mexico, altitude 1,700 to 1,750 m., 4-5 October, 1898, no. 196. Readily distinguished from the other species of the genus by its much broader and well-petioled leaves. This may possibly prove identical with *Eupatorium triangulatum*, Alam., or *E. rubrocaule*, HBK.

An effort to secure a more accurate classification of the tropical American Eupatoriums represented in the Gray Herbarium has suggested the publication of the following new species and specific reductions. The writer hopes later to publish a synopsis of the Mexican and Central American species and thereby show more clearly the affinities of the forms here proposed.

*EUPATORIUM ADENACHAENIUM*, Sch. Bip. in Klatt, Leopoldina, xx. 75 (1884). Add syn. *E. adenochaetum*, Hemsl. Biol. Cent.-Am. Bot. ii. 91 (1881), nomen nudum.

*E. ADSPERSUM*, Klatt, Bull. Soc. Bot. Belg. xxxv. 279. Add syn. *E. polanthum*, Klatt, l. c. 281. It is impossible to detect differences of any moment whatever. I doubt whether either is really distinct from Dr. Klatt's earlier species *E. anisochromum*, Bull. Soc. Bot. Belg. xxxi. 186 (1892).

*E. aegiophyllum*. Stem terete, clothed with close sordid or tawny slightly scabrous tomentum; internodes long: leaves opposite, ovate, subrotund, shortly acuminate, shallowly and broadly cordate, 1.2 dm. long, nearly or quite as broad, puberulent and slightly scabrous above, much paler and at first tomentose but at length glabrate and veiny beneath, serrulate (sometimes obsoletely so); nerves at base pinnate then palmate somewhat above the base; petioles tomentose, 5 to 7 cm. long: inflorescence a large round-topped many-headed panicle; branches opposite, tomentose; primary bracts petiolate, similar to the leaves; the secondary and ultimate ones linear or subulate; heads 1 cm. long, 20-30-flowered; involucreal scales about 22, lance-linear, subequal, acute, glandular-puberulent on the back, loosely imbricated: corollas 5 mm. long, about equalling the whitish pappus; the slender proper tube ex-



ceeding the gradually amplified throat: achenes slender, brown, attenuate below, 3 mm. long. — Collected by E. W. Nelson on eastern slope of Mt. Orizaba, altitude 1,500 to 2,100 m., 21 March, 1894, no. 304. Near *E. subpenninervium*, Klatt, but with smaller more numerous heads, and with petioles 2 to 3 times as long, etc.

*E. ALBICAULE*, Sch. Bip. in Klatt, Leopoldina, xx. 89 (1884). Add syn. *E. drepanophyllum*, Klatt, Ann. k. k. Naturh. Hofmus. Wien, ix. 356 (1894). The type of the latter species stated by Dr. Klatt as collected by *Sauwne* is *Gaumer's* no. 122 from Cozumel Isl.

*E. ALBICAULE*, Sch. Bip., var. *laxius*. Inflorescence somewhat looser than in the type: scales of the involucre linear-attenuate, 5 mm. long. — Collected by Dr. Edward Palmer in Ymala, Mexico, 16 to 25 August, 1891, no. 1474 (type) and by Dr. J. N. Rose at Rosario, Sinaloa, 7 July, 1897, no. 1566. Dr. Rose's no. 1839 from the same locality is probably the same, although the inflorescence is still more open.

*E. amblyolepis*. Smoothish herb or undershrub, 3 to 6 dm. high; stems slender, terete, at first puberulent, soon glabrate and lucid, copiously branched; branches opposite, ascending: leaves opposite, lanceolate, acute to attenuate at each end, serrulate to subentire, thin, green, glabrous, and somewhat lucid, minutely pellucid-punctate, 5.5 cm. long, 1.3 cm. broad, 3-nerved from somewhat above the cuneate base; petioles 4 to 6 mm. long: heads small, numerous, in flat-topped corymbs; pedicels 5 to 8 mm. long, bracteolate near the summit; involucre bracts about 13, in 2 subequal series, obovate-oblong, pale green, striate, rounded and ciliate at the summit, 3 mm. long, at length spreading: flowers about 15, small: corolla probably white, 3.5 mm. long, somewhat exceeding the very delicate and rather sparse bright white pappus: achenes 1.5 mm. long, black, minutely roughened on the sharp angles. — Collected by C. G. Pringle on cool ledges of the Sierra de Tepoxtlán, 24 km. north-east of Cuernavaca, altitude 2,300 m., 7 February, 1899, no. 8034.

*E. AREOLARE*, DC., var. *leiocarpum*. Nearly glabrous throughout: flowers somewhat larger than in the typical form and borne in condensed cymes: achenes smooth. — Collected by E. W. Nelson, near Chilpancingo, Guerrero, Mexico, altitude 2,700 to 3,100 m., 24 December, 1894, no. 2221. Types in herb. Gray and herb. U. S. Nat. Museum. There are no marked differences between the typical form of this species and the later *E. tubiflorum*, Benth. Pl. Hartw. 76, so far as the tolerably detailed descriptions indicate. Hemsley refers to Ghiesbreght's no. 530 under both names. The vaguely characterized *E. papantlense* of Lessing may perhaps be the same.

*E. BADIUM*, Klatt, Bull. Soc. Bot. Belg. xxxi. 186 (1892), a species based upon a Costa Rican type, is well matched by Mr. E. W. Nelson's no. 2251 collected near Chilpancingo, Guerrero, Mexico.

*E. BERTHOLDII*, Sch. Bip., var. *stenophyllum*. Leaves lance-oblong, attenuate at each end, 9 cm. long, 2 to 2.4 cm. broad, entire. — Collected by C. G. Pringle in cañons near Guadalajara, Jalisco, 8 December, 1888, no. 1831. A shrub 2 m. high. The typical form of north-western Mexico has ovate serrulate leaves.

*E. brickelloides*, Klatt, Jahrb. Hamb. Wissensch. Anstalten, ix., pt. 2, 1892, 124, is a *Trixis*!

*E. capnoresbium*. Shrub with slender opposite terete glabrate branches; branchlets, petioles, and pedicels sordid glandular-tomentose: leaves opposite, elliptic-oblong, acute at each end, impunctate, more or less serrate from the middle to the apex, not revolute at the base, pubescent above with short rather sparse hairs, paler and pubescent especially on the midnerve and pinnate veins beneath, 3.5 cm. long, 1.6 cm. broad; petiole 6 mm. long; heads (1 cm. in length) in trichotomous round-topped fastigiate corymbs, slender-pedicelled, about 10-flowered; involucre scales lance-oblong, acutish, purple-tinged, glandular-puberulent dorsally, one or two of the outer lance-linear and shorter than the rest: corollas 6 mm. long, purplish: achenes prismatic, 3 mm. long, puberulent. — Collected by C. G. Pringle in forests at the foot of the Sierra de Ajusco in the Federal District, Mexico, 26 June, 1897, no. 7438, type (in herb. Gray), and earlier by Schaffner on Mt. Popocatepetl, altitude 2,700 m., September, 1855, also by Bourgeau in a forest of the Desert Viego near City of Mexico, 1865-66, no. 844. This species has the inflorescence and much the habit of *E. micranthum*, Less., which, however, has the leaves finely, but distinctly punctate on both surfaces and revolute at the base. See remarks under *E. glaucum*, below.

*E. cardiophyllum*. Stout, tall herb, short-pubescent or tomentulose and scabrous throughout; stem terete, striate, fistulose: leaves opposite, ovate-orbicular, short-acuminate, cordate with an open sinus, crenate, 1 to 1.6 dm. long, about as broad; petioles 2 or more cm. long, connate at the base: rounded terminal corymb loose, ample, 2 to 3.4 dm. broad, its branches subtended by bract-like much reduced leaves; bractlets linear or filiform; branches and pedicels dark purple, glandular-pubescent: heads 8 mm. long, 24-flowered; involucre scales about 15, linear, acute, purple, puberulent, unequal, not strongly imbricated: corollas 5 to 6 mm. long, exceeding the nearly white pappus: achenes black, white-puberulent under a lens. — Collected by C. G. Pringle on slopes of

cañons near Guadalajara, Jalisco, Mexico, 29 October, 1889, no. 2343, and earlier on the Rio Blanco in the same neighborhood by Dr. Edw. Palmer, October, 1886, no. 665. Both plants were distributed as *E. Benthamii*. However, Klatt's species of that name (which is a clear synonym of the earlier *E. Ehrenbergii*, Hemsl.) has ovate serrate not cordate leaves, more numerous flowered heads, etc.

*E. CHAPALENSE*, Wats., var. *salicifolium*. Leaves narrowly lanceolate, merely serrulate, acute at both ends, 4 to 6 cm. long, 1.2 to 1.4 cm. broad: scales of the involucre oblanceolate, broader than in the typical form.—Collected by C. G. Pringle on mountains near Lake Chapala, Jalisco, Mexico, 18 October, 1895, no. 7071. The leaves of the typical form are more than 4 cm. broad. The variety retains the floral characters and unequal pappus of the type.

*E. chiapense*. Stem terete, clothed with a dense purplish brown tomentum; internodes long (6 to 8 cm.): leaves opposite, ovate, acuminate, serrate-dentate except near the rounded base, dull green and except on the subpinnate nerves nearly glabrate above, paler and ferrugineous-tomentose upon the nerves and veins beneath, 1 to 1.4 dm. long, 6.5 to 8 cm. broad; petioles densely tomentose, 4 to 5.5 cm. long: heads numerous, 9 mm. high, about 24-flowered, borne in a compound round-topped corymb (1.5 dm. broad); the opposite branches and pedicels tomentose with purple gland-tipped hairs; involucre subsimple and scarcely imbricated; scales about 10, narrowly linear, attenuate, mostly 2-ribbed, 6 mm. long, pubescent: corollas glabrous, 5 mm. long, exceeding the dull white pappus; throat equalling the proper tube: achenes black, glabrous, tapering toward the base, 4 mm. long.—Collected by E. W. Nelson, near Pinabete, Chiapas, Mexico, altitude 2,000 to 2,400 m., 8 February, 1896, no. 3786. This species is related to *E. Ehrenbergii*, Hemsl., but has much narrower involucral scales, smaller heads, glabrous corollas, etc. It is also and perhaps still more closely related to *E. Donnell-Smithii*, Coulter, which, however, has pale obtusish involucral bracts, and flowers much smaller, scarcely more than half as long.

*E. crassirameum*. Large shrub or small tree, 3 to 5 m. high, glabrous throughout: branches thick, terete, soft-woody to the inflorescence, covered with a pale gray cortex: leaves opposite, petiolate, large, deltoid-ovate, thin, pellucid-punctate, glabrous, acuminate, repandly few-toothed at the sides, pinnately veined, becoming 1.5 dm. long and about equally broad; petioles 5 cm. in length: heads numerous, about 15-flowered, pedicellate in dense rounded compound corymbs (9 cm. in

breadth); involucre only 2 or 3 mm. long, little imbricated; the scales oblong, scarcely acute, unequal, ciliolate: flowers purple, 6 mm. in length. — Collected by C. G. Pringle on lava fields near Cuernavaca, altitude 1,500 m., no. 8271. The flowers on the fleshy naked branches were secured 16 February, and the leaves 29 September, 1899. Very distinct in habit from any species of which I can find record.

**E. crenaeum.** Erect herb; simple stems so grooved as to become cross-shaped in transverse section, pulverulent-puberulent; internodes mostly long, the lower more than 1 dm. in length: leaves opposite, decussate, ovate, obtusish, crenate, obtuse at the subentire base, finely and sparsely pubescent upon both surfaces, 9 to 11 cm. long, 7 to 8 cm. broad, 5-nerved from the base, slightly paler beneath; petioles relatively short, 1 to 1.3 cm. long, puberulent: heads about 50 in a terminal flat-topped corymb; pedicels filiform, flexuous, 5 mm. long; involucre bracts about 14, subequal, linear, acute, 1–3-nerved toward the base, 6 mm. long; flowers about 16; corolla probably white or pale, 5 mm. long, equalled by the white pappus; achenes glabrous, gray. — Collected by C. G. Pringle in springy places near Guadalajara, Jalisco, Mexico, 6 July, 1889, no. 2878.

**E. desquamans.** Copiously branched shrub; branches spreading, lignescent nearly to the tips; internodes mostly very short, soon covered by a grayish cortex: leaves opposite, petiolate, small, oval, obtuse or merely acutish at each end, 1.8 cm. long, 8 to 11 mm. broad, pinnately veined, finely serrate, at maturity green above and puberulent only under a good lens, paler beneath, when young clothed especially beneath with a close silvery web which soon breaks up into deciduous scalelike remnants; petioles 3 to 5 mm. long: inflorescences simple or nearly so, terminal, 5–9-headed, racemiform; pedicels opposite, 1 cm. long, bracteolate near the middle; involucre subsimple, of linear acute brownish puberulent subequal bracts about 13 in number and 5 mm. long: flowers about 15, 1 cm. long: corolla apparently white or pale, about equalled by the copious nearly white pappus: achenes smooth, black, shining, sharply angled. — Collected by C. G. Pringle on summit ledges of the Sierra de San Felipe, Oaxaca, altitude 3,100 m., 22 May, 1894, no. 5858. Type in herb. Gray.

**E. GLAUCUM**, Klatt, Leopoldina, xx. 89 (1884). The publication of this species has been unfortunate in several ways. The name first appears in print as "*E. glaucum*, Sch. Bip. ex A. Gray" in Hemsl. Biol. Cent.-Am. Bot. ii. 95 (1881), where Parry & Palmer's no. 335 from San Luis Potosi is referred to it. This mention cannot constitute

publication, however, as it is not accompanied by any description or synonymy whatever. The specimen cited is *E. micranthum*, Less. (*E. ligustrinum*, DC.).

Dr. Gray evidently got his idea of Schultz's *E. glaucum* from a plant now in herb. Gray collected by Schaffner on Popocatepetl and labelled in Schultz's own hand "*E. glaucum*, Sch. Bip. in Ehrenb. pl. Mex. no. 397." This plant is a species evidently near *E. micranthum*, Less., but differing in its impunctate leaves, &c.

In 1884 Dr. Klatt published, l. c., the first description of *E. glaucum*, but it is quite evident from the characters given as well as from a good drawing and some fragments in his herbarium that Dr. Klatt had quite a different plant before him from either *E. glaucum*, Gray (nomen nudum) or *E. glaucum*, Sch. Bip. in herb. (coll. Schaffner). Identical with Dr. Klatt's *E. glaucum* (which, being the first species described under that name, must stand) is *E. Orizabae*, Sch. Bip., described on the subsequent page (Leopoldina, xx. 90) by Klatt himself. This species is clearly shown by the excellent specimens distributed by Liebmann, no. 80, and Nelson, no. 1737 (from near Reyes, Oaxaca). The leaves are small, thickish, and subsessile and the branches numerous and ascending.

The original *E. glaucum*, Sch. Bip. in herb., which is quite different was also distributed by Schultz under a name approaching "*E. popocatepetlense*," but with some differences in the spelling. Mr. Hemsley refers *E. popocatepetlense* (nomen nudum) to Schlechtendahl and cites under it Ghiesbreght's no. 529 (which with its glandular-punctate leaves revolute at the base is *E. micranthum*, Less.). Schultz's name in Dr. Gray's hand appears on the label of Ghiesbreght's specimen in herb. Gray, and the substitution of Schlechtendahl as authority is certainly a clerical error in the Biologia Cent.-Am. and Index Kewensis. While Schultz's species seems to be a good one, it would seem unwise to launch it under a different spelling of a name already used in another significance. It has therefore seemed best to describe it as above under a new name *E. capnoresbium*.

The synonymy of the related species here mentioned may be stated thus: —

*E. MICRANTHUM*, Less. *Linnaea*, v. 138 (1830), not of Lag. (which was an *Ageratum*).

*E. ligustrinum*, DC. *Prodr.* v. 181 (1836).

*E. semialatum*, Benth. *Pl. Hartw.* 76 (1841).

*E. popocatepetlense*, Hemsl. *Biol. Cent.-Am. Bot.* ii. 99 (1881).

*E. glaucum*, Hemsl. l. c. 95 (1881), not Sch. Bip. nor Klatt.

*E.* CAPNORESBIUM, n. sp.

*E. glaucum*, Sch. Bip. in herb.

Also under another unedited name by Schultz.

*E.* GLAUCUM, Klatt, Leopoldina, xx. 89 (1884), not Sch. Bip. (nomen nudum) nor Hemsl. (nomen nudum).

*E. Orizabae*, Sch. Bip. in Klatt, l. c. 90 (1884).

*E. heterolepis*. Soft woody stems glabrous, lucid: leaves opposite, approximate, decussate, lance-oblong, entire, acute at each end, coriaceous, 1.2 to 1.4 dm. long, 3.6 to 4.8 cm. broad, nigrescent, pinnately and rather obscurely veined, pulverulent under a good lens; petioles 2 to 3 cm. long; heads 8 mm. long, 1 to 1.2 cm. in diameter, about 18-flowered, borne on filiform flexuous divergent pedicels in an open pyramidal panicle; scales of the involucre of two kinds, the inner long, linear, acute, about equaling the flowers, stramineous, at length deciduous; the outer (about 6 in number) ovate to lanceolate, acutish, much shorter, persistent, nigrescent: corollas 5 to 6 mm. long, with slender proper tube and distinctly enlarged throat: pappus of about equal length, somewhat sordid: achenes glabrous, 2 mm. long. — Collected by Dr. Sereno Watson in "eastern portions of Vera Paz and Chiquimula," Guatemala, 1885, no 65. Type in herb. Gray. A very distinct species with a calyculate involucre recalling a *Senecio*.

*E. Heydeanum*. Stems somewhat flattened, especially beneath the nodes, striate, tomentulose above, soon glabrate and slightly scabrous: leaves opposite, ovate to ovate-lanceolate, caudate-acuminate at the apex, cuneate at the base, entire, 3-nerved from above the base, sordid-tomentulose upon the nerves above, at first sordid-tomentulose at length merely pubescent and slightly paler beneath, thin, 1.7 dm. long, 7 to 8 cm. broad; petioles sordid-tomentulose, 4 to 9 cm. long: panicle opposite-branched, rounded, terminal, 1 dm. broad; heads about 22-flowered, 9 mm. long, short-pedicelled; involucreal scales linear, acute, about 16, loosely imbricated, sordid-tomentulose on the outer surface, the outer shorter: corollas 5 to 6 mm. long, gradually enlarged from the base to the short-toothed limb, without sharply differentiated throat: achenes slender, 5 mm. long, hispidulous on the angles; pappus sordid, of nearly equal length. — *E. Ehrenbergii*, Coulter in J. D. Smith, Enum. Pl. Guat. iv. 74, not Hemsl. — Collected by Heyde & Lux on Rio de Las Cañas, Depart. Santa Rosa, Guatemala, altitude 800 m., March, 1892, no. 3427 of Mr. J. Donnell Smith's sets. Type in herb. Gray. *E. Ehrenbergii*, Hemsl., has serrate leaves, much larger heads, and broader involucreal scales.

*E. lanicaule*. Stems 1 to 3 m. high, terete, striate, covered at least when young with shaggy tawny wool: leaves opposite, thickish, short-petioled, oblong, acuminate, sharply serrate, narrowed to a crisped base, appressed-villous above especially upon the veins, soft-pubescent upon the pinnate prominulous veins beneath, concolorous, slightly reticulate, 1.3 to 1.6 dm. long, 2 to 5 cm. broad; petioles lanate, 5 mm. long; inflorescence somewhat rigid, rather dense; lower branches widely spreading, thickish; bracts lance-linear, nearly equalling the heads; involucre subturbinate; the scales pluriseriate, elliptical, regularly imbricated, at length campanulately spreading, finely striate, ciliate; flowers 1.2 cm. long: corolla 7 mm. long, cylindrical with little enlargement at the throat: pappus slightly tawny, of the same length: achenes columnar, puberulent on the angles. — Collected by Dr. Sereno Watson in the "eastern portions of Vera Paz and Chiquimula," 1885, nos. 74 a, 123. Types in herb. Gray. Nearly allied to the W. Indian *E. plucheooides*, Griseb., but differing in its larger heads, broad smoothish obtuse involucreal scales, etc.

*E. Loesenerii*. Shrub, 2 to 3 m. high; branches stout, terete, opposite, curved-ascending, covered with a smooth gray cortex with longitudinal rifts, the lenticels not prominent; branchlets stoutish, elongated, covered with a fine ochraceous tomentum (sometimes reduced to a mere pulverulence): leaves opposite, petiolate, broadly ovate or oval, shallowly cordate, rounded or very obtuse with slight mucro at the apex, obsoletely serrate or entire, 5 to 6 cm. long, 4 to 5 cm. broad, subpalmately veined, pale green and pulverulent above, tomentulose and ochraceous beneath; petioles 2 to 3.5 cm. long, strongly channelled above, subconnate at the base: heads numerous, about 20-flowered, in terminal round-topped compound corymbs (9 to 12 cm. broad); pedicels 7 to 9 mm. long; involucre tomentulose, 3 mm. long, campanulate, the scales subequal, obtuse or barely acute, ciliate, ochraceous or purplish, scarcely at all herbaceous: corolla white or pale purple, 4 mm. long, glabrous, resinous-punctate on the teeth: pappus-bristles about 20, white, unequal; angles of the achene upwardly hispid. — Collected in Oaxaca by C. G. Pringle on calcareous hills, Las Sedas, altitude 1,800 m., 30 October, 1894, no. 6022, type (in herb. Gray). This plant was unfortunately determined as *E. sordidum*, Less., from the not altogether satisfactory description of that species. A comparison by Mr. J. M. Greenman of Mr. Pringle's plant with authoritative material of *E. sordidum* now shows that the latter is quite distinct, being in fact of the *Hebeclinium* group. *E. Loesenerii* has also been collected by E. W. Nelson along the Cuicatlan road, Valley of Oaxaca, altitude 2,100 to 2,400 m., 3 October, 1894, no. 1549; by

L. C. Smith, Rancho de Calderon, San Juan del Estado, altitude 1,700 m., 4 November, 1894, no. 275; and by C. & E. Seler at Cuauhtilla, 28 November, 1895, no. 1537, between Yanhuitlan and Teposcolula, Oaxaca, 3 December, 1895, no. 1430, and Cañada Sta. Maria, 8 December, 1895, no. 1596. I take pleasure in dedicating this species to Dr. Theodor Loesener of the Royal Botanical Museum at Berlin.

**E. Nelsonii.** Slender shrub, 1.6 to 3 m. high: stems terete, striate, dark brown, minutely gray-pubescent, somewhat flexuous; internodes rather long: leaves opposite, ovate, caudate-acuminate, dentate, about 7-nerved from the deeply cordate and more or less hastate base, membranaceous, dull-green and finely gray-pubescent upon both surfaces, 8 to 10 cm. long, 5 to 8 cm. broad; petioles flexuous, 3 to 4.5 cm. long, puberulent: heads about 16-flowered, numerous, 8 mm. long, borne in opposite axillary and terminal trichotomous nutant corymbs; peduncles and pedicels pubescent, filiform; involucre scales very unequal, light green, striate, elliptical, obtuse, rounded or erose at the summit, imbricated in 3 or 4 rows: corollas at anthesis 4 mm. long, of essentially uniform diameter throughout, thus not clearly differentiated into tube and throat, pale, said to be yellowish: styles dark, strongly clavate; achenes (of the genus) hispidulous, 3 mm. long, tapering almost from the summit to the base, at length subglabrate and nearly black. — Collected by E. W. Nelson between Ayusinapa and Petatlan, Guerrero, 14 December, 1894, no. 2144; by C. G. Pringle on Monte Alban, Oaxaca, altitude 1,700 m., 21 December, 1894, no. 5637 (leaves less deeply cordate); and by C. & E. Seler, in mountain woods between Yanhuitlan and Teposcolula, Oaxaca, Mexico, 3 December, 1895, no. 1447. Types in herb. U. S. Nat. Museum, herb. Royal Bot. Museum, Berlin, and herb. Gray. This species has the involucre and clavate style-branches of a *Brickellia*. The achene, however, is distinctly that of a *Eupatorium*.

**E. OERSTEDIANUM**, Benth. in Oersted, Vidensk. Meddel. 1852, p. 74. Add syn. *E. vernonioides*, Coult. Bot. Gaz. xx. 45.

**E. oresbium.** Upper part of the stem, peduncles, and pedicels loosely pubescent with a sparse more or less deciduous tawny wool: leaves opposite, ovate, acuminate, rounded or subcordate below, very shortly cuneate at the attachment of the petiole, cuspidate-denticulate, thin, very finely pellucid-punctate, green and glabrous above, scarcely paler and conspicuously villous upon the nerves beneath, 5-7-nerved from a point somewhat above the base, 1.2 to 1.4 dm. long, 1 dm. broad; petioles 8 to 10 cm. long, puberulent, also tomentose along the grooved upper surface: corymb open, rounded or subpyramidal, tri-



chotomous; pedicels filiform, 5 mm. long; involucre bracts thin, pale green, very unequal, the inner oblong, obtuse, ciliate and minutely puberulent, 6 mm. long, the outer much shorter, ovate-lanceolate, acute, glabrous: flowers about 16: corolla purple, 6 mm. long, considerably exceeding the delicate bright white pappus: achenes glabrous, dark gray, 2 mm. long. — Collected by C. G. Pringle in a wet mountain cañon above Cuernavaca, Mexico, altitude 2,000 m., 15 February, 1899, no. 8030. Three to five meters high.

*E. PACACANUM*, Klatt, *Botanisches Beiblatt zur Leopoldina*, 1895, p. 3. Add syn. *E. roseum*, Klatt. *Bull. Soc. Bot. Belg.* xxxi. 194 (1892), not Gard. Both of Dr. Klatt's species here mentioned rest upon Pittier's no. 3324. The existence of an earlier valid *E. roseum* necessitates the adoption of Dr. Klatt's second name.

*E. phoenicolepis*. Stems terete, probably herbaceous, purplish brown, covered with dense very short glandular sordid tomentum: leaves opposite, ovate, acuminate, cordate with a narrow sinus, serrate, dull green, pulverulent and sometimes bullate above, paler, tomentose and reticulate-veiny beneath, 3-nerved from near the base, 5 to 7 cm. long, 2.4 to 4.5 cm. broad; petioles 1.4 to 3 cm. long; bracts similar to the leaves except in their smaller size, extending up into the many-headed opposite-branched round-topped panicle; heads 1 cm. in height, about 18-flowered; bracts of the involucre purple, flat, striate, acutish, very unequal, regularly imbricated in 4 to 5 series, the outer very short, ovate, dark and dull, the inner lighter and somewhat lucid, about equaling the flowers: corollas apparently deep purple or crimson, 5 mm. long, equalling the delicate and not very copious pappus: style-branches clavate; achenes 2.2 mm. long, upwardly hispidulous under a lens. — Collected by E. W. Nelson between San Cristobal and Teopisca, Chiapas, Mexico, 4 December, 1895, no. 3475. Types in herb. Gray and herb. U. S. Nat. Museum. A species with the styles and to some extent the involucre of a *Brickellia* but the achenes of a *Eupatorium*. It is most nearly related to *E. Bigelovii*, Gray, which, however, has much more acute scales and smaller leaves not cordate at the base.

*E. photinum*. Glabrous up to the slightly pulverulent-puberulent inflorescence, herbaceous, erect, 5 dm. high; stems terete, subsimple, dark purple, with rather long internodes: leaves opposite, ovate or ovate-lanceolate, 7 to 11 cm. long, 3 to 4 cm. broad, caudate-attenuate, serrate except near the subacute base, green, glabrous, and somewhat lucid upon both surfaces, 3-nerved from near the base; reticulate veins slightly translucent; petioles purple, 1.5 to 2 cm. long; heads small,

5 mm. high, about 16-flowered, borne in small round-topped corymbs at the ends of the opposite branches, also forming a larger dense terminal corymb; pedicels 4 mm. long; involucre bracts subequal, oblong, obtuse, pale green, striate, 3 mm. long: corollas nearly white, 2.5 mm. long, the well-marked throat nearly as long as the proper tube: pappus (not copious) about equalling the corolla: achenes black, 1.2 mm. long, minutely roughened on the angles. — Collected by C. G. Pringle on shaded cliffs of the Sierra de Tepoxtlán, 24 km. northeast of Cuernavaca, Mexico, altitude 2,300 m., 7 February, 1899, no. 8029.

**E. platyphyllum.** Shrubs with stems pithy, 6-angled, stoutish but flexuous as if scandent, at first sordid tomentulose-pulverulent, at length glabrate; internodes rather long: leaves opposite, 1.2 to 1.8 dm. long, the largest 2.2 dm. broad, shallowly 3-lobed, acuminate, rounded below to a very shortly cuneate base, thin, green and glabrous or nearly so on each surface, 3-nerved from the base, coarsely reticulate-veined, the veins pale and slightly prominulous beneath; lobes acuminate, cuspidate-denticulate; petioles slender, 3 cm. long: heads large, numerous, 60–75-flowered, aggregated at the ends of the slender ascending branches of a broad somewhat pyramidal panicle; pedicels filiform, about 1 cm. long; involucre campanulate, 1 cm. high, 1.3 cm. in diameter; scales pluriseriate, regularly but loosely imbricated, very unequal in length, stramineous, striate, scarious and erose near the rounded tips: corollas 6 mm. long, probably white, very slender, without distinctly enlarged throat, equalled by the copious bright white pappus: achenes glabrous, 2 mm. long. — Collected by E. W. Nelson, near Chicharras, Chiapas, Mexico, altitude 900 to 1,800 m., 6 February, 1896, no. 3765; also by E. A. Goldman at Metlatoyuca, Puebla, no. 78. Types in herb. Gray and herb. U. S. Nat. Museum.

**E. SALTIVARI**, Sch. Bip. in Rob. & Sea. Proc. Am. Acad. xxviii. 108 (1893). Add syn. *E. abronium*, Klatt, Ann. k. k. Naturh. Hofmus. Wien, ix. 355 (1894).

**E. scabrellum.** Stems angled and furrowed above, finely grayish pubescent or tomentulose: leaves subalternate (at least the upper ones), petiolate, ovate, scarcely acute, subcordate or rounded at the base, crenate-denticulate, 5 to 16 cm. long, 3 to 12 cm. broad, thin but of harsh texture, green upon both sides not paler beneath, glabrous to the naked eye, but somewhat scabrous and under a lens puberulent, palmately 3-nerved somewhat above the pinnately several-nerved base: inflorescence an alternate-branched many-headed racemose panicle, its lower branches (subtended by leafy bracts) 1.2 dm. long, naked below,

branched and somewhat thyrsoid from the middle, pubescent; involucre bracts about 10, oblong, pubescent, green, subequal (only 2.5 mm. long) except the 1 or 2 calyculate external ones: flowers about 10: corollas white, 2.5 mm. long, the throat funnel-formed without sharp demarcation from the relatively short proper tube: achenes at length black, 1.5 mm. long: pappus white, equalling the corolla, not copious. — Collected by E. A. Goldman near Batopilas, Chihuahua, Mexico, altitude 1,700 to 2,000 m., 4 to 5 October, 1898, no. 197. Types in herb. U. S. Nat. Museum and herb. Gray.

*E. scorodonioides*, Gray, var. *grossedentatum*. Leaves deltoid, hastate, rather deeply cordate, coarsely crenate-toothed: pubescence less copious and shorter than in the typical form. — Collected by C. G. Pringle on limestone hills near Tula, Hidalgo, 20 September, 1899, no 8244.

*E. Selerianum*. Branches opposite, weak, flexuous, terete, striate, finely pubescent: leaves opposite, petiolate, ovate, abrupt or cordate at the base, acuminate or narrowed to an obtusish tip, glabrate above, gray-tomentulose beneath, 1.5 to 3 cm. long, two-thirds as broad, crenate; petioles 1 to 1.5 cm. long: inflorescence a lax flat-topped compound corymb; the branches filiform, opposite or alternate, bearing 1 to several small nearly orbicular short-petioled bracts (4 to 5 mm. in diameter); pedicels 4 to 7 mm. long, minutely bracteolate; scales of the involucre about 13, oblong, pale green or stramineous, striate, obtuse or erose at the summit, the inner about 4 mm. long, the two or three outer considerably shorter; heads about 15-flowered; flowers apparently pale or white: corolla 2.3 mm. long; the throat exceeding the proper tube: pappus white, not very copious: achenes black, glabrous. — Collected by C. & E. Seler, at Hacienda Petapa, Tuxtla, Chiapas, Mexico, 1896, no. 1939. Type in herb. Gray. This species is related to *E. guadalupense*, but is probably perennial and differs much in pubescence and in the presence of the orbicular bracts.

*E. Smithii*. Shrub, 1 to 2 m. high, cinereous-puberulent or tomentulose: branches opposite, spreading, covered with fissured buff cortex: leaves opposite, ovate inclining to be deltoid, rounded at the apex, truncate or subcordate at the base, pale green and merely pulverulent above, cinereous-tomentulose and veiny beneath, crenate to entire, 2.3 to 6 cm. long, 2 to 4.5 cm. broad; petioles 1 to 1.5 cm. long, channelled above: inflorescences trichotomous round-topped corymbose panicles, seldom over 5 cm. in breadth; pedicels and pale green subherbaceous loosely imbricated obtusish involucre scales slightly woolly: flowers about 23 in a head, 7 mm. in length; corollas white, gradually enlarged from the

base and without definitely marked throat; segments ovate-oblong. — Collected in Oaxaca by C. G. Pringle, on Monte Alban, altitude 1,800 m., 8 October, 1894, no. 4959, type (in herb. Gray); by L. C. Smith on mountains of San Juan del Estado, altitude 2,100 m., 4 November, 1894, no. 274; and by C. & E. Seler, above Porian, 27 November, 1895, no. 1547. This species stands very close to *E. Loesenerii* and may eventually prove a variety of it, but as yet, although each species has been independently secured by three collectors, no intergradation has been observed. The differences are as follows: *E. Smithii* has smaller leaves of a more deltoid contour and with a cinereous rather than ochraceous indumentum; its inflorescences are considerably smaller, while the involucre bracts are larger, more herbaceous, and less closely appressed; finally the teeth of the corolla are, on careful comparison, longer and ovate-oblong rather than deltoid as in *E. Loesenerii*.

*E. THIELEANUM*, Klatt, Bull. Soc. Bot. Belg. xxxi. 191 (1892). Add syn. *E. myrianthum*, Klatt, Botanisches Beiblatt zur Leopoldina, 1895, p. 3, founded on the same specimens and described in the same words.

*E. VALVERDEANUM*, Klatt, Bull. Soc. Bot. Belg. xxxi. 188, (1892). Add syn. *E. chrysocephalum*, Klatt, Botanisches Beiblatt zur Leopoldina, 1895, p. 2. Dr. Klatt's two species are founded upon the same specimens and their descriptions are identical. The earlier name must, of course, be adopted.

*E. VITALBAE*, DC. Prodr. v. 163 (1836). Add syn. *E. Ecuadorae*, Klatt, Ann. k. k. Naturh. Hofmus. Wien, ix. 356 (1894).

*MIKANIA ERIOPHORA*, Sch. Bip., var. *chiapensis*. Pubescence more hirsute than in the type, the hairs spreading, not at all felted or interplexed: leaves large, deeply cordate, becoming 2.2 dm. long, and 1.7 dm. broad: involucre scales early glabrate. — Collected by E. W. Nelson at Chicharras, Chiapas, Mexico, altitude 900 to 1,800 m., 6 February, 1896, no. 3769. This variety has much the habit of *M. pyramidata*, J. D. Smith, but that has the leaves smaller, rounded at the base, and the pubescence subappressed on the pedicels.

*Porophyllum brachypodum*. Shrub, scarcely or not at all glaucous; stems somewhat rigid, branched toward the end, lucid: leaves (only the upper ones shown) lanceolate to linear, narrowed to an obtusish glanduliferous point, cuneate at the base, entire, 3.5 cm. long, 4 to 8 mm. broad; petioles 4 mm. long; glands on the blade all marginal, large, subremote, on the narrower leaves often alternate: pedicels 5 to 8 mm. long, slightly clavate, spreading; involucre bracts oblong, rather broad,

obtuse, tufted at the cuspidate apex, 8 to 9 mm. long, usually carinate, pale green with broad diaphanous margins; glands biseriate, approximate to the keel, elliptical or oblong, not linear, amber colored: flowers about 16: corollas 7 mm. long, at anthesis about equalling the sordid pappus; the slender proper tube about twice the length of the throat: achenes slender, dull black, upwardly hispid, 7 to 8 mm. long. — Collected by Dr. J. N. Rose at Guaymas, Sonora, Mexico, 5 to 11 June, 1897, no. 1272. Near *P. obtusifolium*, DC., which, however, has more acute dark purple involucreal scales marked with dark linear glands.

*LIABUM PRINGLEI*, Rob. & Greenm. Proc. Am. Acad. xxxii. 49 (1896). The type specimen of this species published by clerical error as no. 6215 is 6214 of Pringle's *Plantae Mexicanae*.

*Perezia Nelsonii*. Tufted with rusty wool at the slightly decumbent base; stem soon erect (probably 1 m. tall), subterete, striate, branched, leafy about to the middle, glabrous and smooth, purplish: leaves large (1.7 dm. long, 6 to 8 cm. broad), firm, reticulated, oblong-ob lanceolate, rounded, obtuse or acute at the apex, cordate-clasping at the base, sharply dentate with small spreading teeth: branches ascending, nearly naked: heads few, large, many-flowered, 2.5 to 3 cm. long and broad; pedicels 2 to 5 cm. long, bearing several small lanceolate attenuate appressed scale-like bracts passing gradually into the broader ovate to oblong or at length lance-oblong involucreal scales, these green with a slight purple tinge, ciliolate, imbricated in about 7 rows, the middle and inner ones obtuse or rounded and mucronate at the tips, the outer acute, slightly spreading and pungent: purple strongly bilabiate corolla 1.5 cm. long: columnar granulated achene 4 mm. long. — Collected by E. W. Nelson on mountains near Talpa, Jalisco, Mexico, altitude 1,400 to 1,500 m., 7 March, 1897, no. 4037. A species near *P. michoacana* and *P. cuernavacana*, but clearly distinct from either.